

Online supplementary materials for

**“Revisiting the Marshmallow Test: A Conceptual Replication Investigating Links Between
Early Gratification Delay and Later Outcomes”**

Method

Data

Data for the current study were drawn from the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD). Participants were recruited from ten U.S. sites in both urban and rural settings. Mothers who had recently given birth were recruited from nearby hospitals, and mothers were excluded if they could not speak English or if they planned to move within the next 18 months. The first wave of major child-level data collection occurred when the focus child was 1 month of age, at which point 1,364 children remained in the study (roughly 50% of the originally recruited sample). Most of the attrition between initial recruitment and the 1-month interview was concentrated among low-SES mothers and children (see Duncan & Gibson, 2000; NICHD Early Child Care Research Network, 2002). Data collection continued at various times throughout children's lives, with the last full round of measurement occurring when children were 15 years old. The current study relies primarily on data collected when children were 54 month old, in grade 1, and 15 years old. However, for models with covariates, we also rely on data collected between the 1 month child interview and the age 36 month interview.

ECLS-K. For purposes of comparison, we also show demographic characteristics for children and families recruited for participation in the Early Childhood Longitudinal Study-Kindergarten Cohort of 1998-1999 (ECLS-K; Tourangeau, Nord, Le, Sorongon, & Najarian, 2009). The data were collected by the National Center for Educational Statistics (NCES), and the sample was designed to be nationally representative of children in kindergarten during the fall of 1998. This publically-available dataset has been broadly used to study child development and education, and information regarding data collection procedures and study measures has been widely reported.

In Table 1 of the main text, we present information taken from study families during the fall 1998 parent survey. Mothers reported their age at the time of the survey, and we subtracted the focus child's age from the reported mother's age to calculate "Mother's Age at Child Birth." NCES presented family annual income as a categorical variable, with respondents falling into income ranges (e.g., \$20,000-\$25,000). We then gave each participant the middle income value for each category, and used the number of children and adults in the home to calculate the "income to needs ratio" following the guidelines given by the Census Bureau (<https://www.census.gov/topics/income-poverty/poverty/guidance/poverty-measures.html>). Finally, for all descriptive statistics presented, we weighted estimates using the C1C1W0 weight to recover nationally representative estimates.

Measures

Academic achievement. The Woodcock Johnson- Revised (WJ-R; Woodcock, McGrew & Mather, 2001) is a commonly used assessment of cognitive and academic ability, and it contains a number of subtests each designed to measure mathematics and verbal achievement, as well as more general cognitive abilities such as executive function. Each subtest was age-normed and administered by a trained examiner in a one-on-one interview with the child. We focus on WJ-R subtests designed to measure mathematics and reading achievement, which were administered at grade 1 and age 15 years. In some models, we also use WJ-R subtests given at age 54-months as control variables. For all WJ-R subtests, we used the WJ-R standard scores, which were standardized to have a mean of 100 and standard deviation of 15 at each age.

Mathematics achievement. At age 54-months, grade 1, and age 15-years, mathematics

achievement was measured using the WJ-R *Applied Problems* subtest, a commonly used measure of math ability (e.g., Siegler et al., 2012; Watts et al., 2014) that tested mathematical reasoning and problem solving. The examiner administering the test established a basal and ceiling for each child, and items were ordered hierarchically. At age 54 months, the *Applied Problems* items focused on counting and simple arithmetic; by age 15, items focused on algebraic concepts and fractions.

Reading achievement. At age 54 months and grade 1, reading achievement was measured using the *Letter-Word Identification* task, which tested children's ability to sound out simple words. Like the *Applied Problems* test, items on the *Letter-Word Identification* test were also ordered hierarchically, and the examiner established a basal and a ceiling for each child. Early items on the test asked children to match a pictographic representation of a word with an actual picture of the object, and the remaining items asked subjects to read aloud isolated letters and words. At age 15, reading achievement was measured using the *Passage Comprehension* subtest. Early items on this test involved reading a phrase then identifying a picture that depicted the phrase. Later items asked children to read a passage and fill in a missing key word.

Additional 54-month cognitive measures. In models with 54-month covariates, we also used the *Memory for Sentences* and *Incomplete Words* subtests as measures of cognitive ability. The *Incomplete Words* test measured auditory closure and processing, and children listened to an audio recording where words missing a phoneme were listed off. They were then asked to name the complete word. Finally, the *Picture Vocabulary* test was a measure of verbal comprehension and crystallized intelligence. In this task, children were asked to name pictured objects.

Additional problem behaviors. In addition to using the mother-reported Child Behavior Checklist, we investigated the relationship between delay of gratification and other measures of behavioral functioning assessed at age 15. These measures included the Stoplight Task (Gardner & Steinberg, 2005), a measure of risk-taking in which children played a computer game that asked them to control a car attempting to reach a destination in a limited amount of time. While driving the car, children encountered stoplights that forced them to face the choice of either slowing down and losing time or running the light and possibly crashing the vehicle. From this task, we used two measures of risk taking: 1) the amount of time (in milliseconds) between the appearance of a yellow light and the application of the brake; 2) number of brake applications during the entire task. The stoplight task has been used in other developmental studies as a measure of adolescent risk taking (see Chein et al., 2011; Kim-Spoon et al., 2016).

As an alternative measure of internalizing and externalizing, we included scales taken from the age-15 Youth Self Report (YSR). The YSR was adapted from the CBCL, and it included 119 items that allowed youth to assess their own behavior. We also included a self-reported measure of impulse control, taken from the Weinberger Adjustment Inventory (Weinberger & Schwartz, 1990), in which youth responded to 8 items designed to help them assess their own ability to control counterproductive impulses. Finally, we used a youth-reported measure of risky behavior called the Risky Behavior Questionnaire, which was adapted from several different measures used in large studies of child development (Conger & Elder, 1994; Halpern-Felsher, 2005). With this measure, youth responded to 61 items asking them how many times in the past year they had engaged in 55 different risk behaviors (e.g., alcohol use and sexual risk taking).

Continuous Performance Task. In supplemental models described below, we controlled for a 54-month measure of attention and impulsivity called the Continuous Performance Task (CPT; Barkley, 1994). With the CPT, children interacted with a computer

game in which they were asked to click a key every time a certain object appeared on the screen. Attention was measured by the proportion of trials in which the child correctly clicked the key in response to a target object. Impulsivity was measured by the proportion of trials in which a child incorrectly clicked a key in response to a non-target object. These controls were introduced to gauge the extent to which the age-54 month gratification delay “effect” is reduced when differences in concurrent impulsivity are taken into account.

Self-control. We also tested whether controlling for a measure of self-control would reduce the effect of gratification delay on later achievement and behavior. Following the example of Duckworth and colleagues (2013), we created a composite score of self-control from mother and teacher reports at age 54 months. Both mothers and caregivers completed the Child Behavior Questionnaire (CBQ; Rothbart, Ahadi, & Hershey, 1994), and both surveys contained sub-scales that measured “attention focusing” and “inhibitory control.” As with the Duckworth et al. (2013) study, we averaged together the teacher and mother “attention focusing” and “inhibitory” control scales to create a self-control composite (see Duckworth et al. (2013) for a description of the measure’s psychometric properties).

Analysis

Our primary goal is to estimate the association between early gratification delay and long-run measures of academic achievement and behavioral functioning. Like the work of Mischel and Shoda (e.g., Mischel, Shoda, Peake, 1988; Mischel, Shoda, Rodriguez, 1989; Shoda, Mischel, Peake, 1990) our data did not include a measure of gratification delay in which cross-child differences were generated from some exogenous intervention, so we do not pretend that the associations we estimate reflect causal impacts. Instead, the goal of our investigation is to estimate how much bias might be contained in longitudinal correlations between measures of delay of gratification and measures of child cognitive and behavioral functioning as a result of failure to control for characteristics of children and their environments, all measured before age 54 months, that may be causing both differences in 54-month gratification delay times and adolescent outcomes of interest.

To accomplish our analytic goals, we modeled later academic achievement and behavior as a function of an age-54-month measure of gratification delay and pre-54-month controls:

$$(1) \quad Y_{iLATE} = \alpha_0 + \beta_1 DOG_{i54} + \emptyset Back\&Fam_{iEARLY} + \delta Child_{iEARLY} + \lambda Cog_{iEARLY} + \gamma Home_{iEARLY} + \varepsilon_i$$

where Y_{iLATE} is an outcome measure of either academic achievement or behavioral functioning taken at a later time point (both grade 1 and age 15), DOG_{i54} is the 54-month measure of delay of gratification (“DOG”) measured in minutes waited, $Back\&Fam_{iEARLY}$ is a vector of family and child demographic characteristics (e.g., family income, gender, race) assessed prior to the 54-month survey, $Child_{iEARLY}$ is a vector of early measures of the child’s personal characteristics (e.g., temperament, birth weight), Cog_{iEARLY} is a vector of early measures of cognitive functioning, and $Home_{iEARLY}$ is a set of measures of the home environment captured by the 36-month HOME battery. Finally, the error term, ε_i , will be uncorrelated with our key estimate, β_1 , only if our control variables perfectly capture all of the possible sources of confounding variation.

In addition, we tested models that added controls assessed at age 54 months in order to project how changes in delay of gratification ability, holding constant other concurrent cognitive and behavioral abilities, might affect later development:

$$(2) \quad Y_{iLATE} = \alpha_0 + \beta_1 DOG_{i54} + \phi Back\&Fam_{iEARLY} + \delta Child_{iEARLY} + \lambda Cog_{iEARLY} + \gamma Home_{iEARLY} + \chi Cog\&Beh_{i54} + \epsilon_i$$

where all model parameters are defined as with Equation 1, but a vector of cognitive and behavioral measures assessed at age 54 months, $Cog\&Beh_{i54}$, is added. Although it might be argued that the estimates from Equation 2 provide the best projections for how a delay of gratification intervention might affect later functioning, we recognize that the concurrent timing of their measurement with the gratification delay task may risk over-controlling for capacities that are themselves a product of past emotional self-regulation.

All continuous variables were standardized so that coefficients can be likened to effect sizes, and all models with control variables included a set of dummy variables for each site to adjust for any between-site differences. Finally, in order to account for missing data on control variables, we used SEM with Full Information Maximum Likelihood in Stata 13.0 to estimate all analytic models.

Additional Results

Additional correlational results. In Table S1, we a correlation matrix among all analysis variables for the children of mothers who did not graduate college ($n = 551$), and in Table S2, we present the same matrix for the children of college completing mothers ($n = 365$).

Alternative Models

Because models that relied on the children of college completing mothers yielded unreliable results, we focus only on the children of mothers without college degrees (i.e., the lower-SES sample) for supplemental models shown in Tables S3 through S8.

Continuous performance task. Table S3 presents results from models that added controls for age 54-month attention and impulsivity, as measured by the continuous performance task (CPT). These models also included controls measures prior to age 54 months (compare with models 2, 5, 8 and 11 from Table 3). We found that when CPT measures were added, coefficients for gratification delay in achievement models dropped slightly (approximately 21-27%). Thus, we did not find that a direct measure of impulse control completely explained the effect for gratification delay. Further, we only found the CPT measures to be predictive of later outcomes in the grade 1 achievement model.

Self-control. Table S4 also presents results from models with controls measured prior to age 54-months with our composite score of mother and teacher reported self-control also added. Similar to the CPT results, we found only partial mediation. However, our self-control measure significantly predicted achievement and behavior at both grades 1 and age 15. These results again indicate that the gratification delay measure may tap into processes distinct from self-control. For a more complete investigation of this issue, see Duckworth and colleagues (2013), as they had a more robust examination of this hypothesis using the same dataset and the same measure of self-control.

Additional behavioral outcomes. In Table S5, we present descriptive results for additional behavioral outcomes assessed at age 15.

Table S6 presents associations between gratification delay and measures of risk taking; two measures came from the stoplight task and one from the youth-reported Risky Behavior Questionnaire. Aside from the bivariate association between waiting for 7 minutes and youth-reported risk taking ($\beta = -0.38$, $SE = 0.12$, $p = .002$), we found no significant associations between gratification delay and measures of risk taking. In Table S7, we display associations

between youth-reported measures of behavior problems and delay of gratification and we again found no significant results.

Disaggregated measures of achievement and behavior problems. In the main text, we averaged together measures of math and reading achievement, and measures of externalizing and internalizing, to create composite measures of achievement and behavior, respectively. In Table S8, we present disaggregated results in which we regressed individual measures of age-15 math, reading, externalizing, and internalizing on gratification delay. Results closely mirrored the results shown in Table 4 of the main text. In models with controls measured prior to age 54-months, we found associations between the gratification delay dummy variables and measures of math and reading achievement that ranged between 0.19 and 0.29.

Compared with the composite score of behavioral problems, we found slightly larger associations between gratification delay and externalizing behavior, but no associations were statistically significant in models that contained controls. We found no associations between gratification delay and internalizing behavior.

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Table S1

Correlations Between All Analysis Variables for Children of Mothers Who Did Not Complete College

PANEL 1	1	2	3	4	5	6	7	8	9	10
Gratification Delay (54)										
1 Continuous	1.00									
2 <0.333 min.	-0.69	1.00								
3 0.333- 2 min.	-0.43	-0.24	1.00							
4 2 to 7 min.	0.01	-0.24	-0.19	1.00						
5 7 min.	0.89	-0.50	-0.39	-0.39	1.00					
Related Measures										
6 Self-control (54)	0.21	-0.12	-0.10	-0.03	0.20	1.00				
7 Attention (54)	0.22	-0.16	-0.08	-0.09	0.26	0.10	1.00			
8 Impulsivity (54)	-0.28	0.26	0.02	0.04	-0.26	-0.21	-0.22	1.00		
Outcome Measures										
9 Achievement (G1)	0.30	-0.26	-0.07	-0.01	0.27	0.30	0.29	-0.26	1.00	
10 Achievement (15)	0.29	-0.27	-0.04	0.02	0.24	0.24	0.18	-0.20	0.60	1.00
11 Behavior (G1)	-0.06	0.03	0.05	-0.01	-0.05	-0.33	-0.06	0.06	-0.09	-0.10
12 Behavior (15)	-0.06	0.07	-0.00	-0.02	-0.05	-0.22	-0.03	0.02	-0.08	-0.09
Demographic Controls										
13 Male	-0.06	0.07	-0.01	-0.01	-0.05	-0.22	-0.01	0.24	0.01	0.12
14 Black	-0.23	0.21	0.05	0.02	-0.23	-0.11	-0.10	0.19	-0.29	-0.33
15 Hispanic	-0.01	-0.02	0.05	-0.01	-0.01	-0.02	-0.01	0.01	-0.04	-0.00
16 Other	-0.01	0.01	-0.02	0.03	-0.02	-0.00	-0.01	-0.05	-0.01	-0.05
17 Age	0.04	-0.04	0.06	-0.07	0.05	0.03	0.02	-0.01	0.02	-0.00
18 Log of Income	0.25	-0.23	-0.04	-0.00	0.22	0.15	0.20	-0.14	0.35	0.32
19 Mother's Age	0.18	-0.17	-0.02	0.01	0.15	0.15	0.12	-0.13	0.21	0.26
20 Mother's Ed (yrs)	0.12	-0.11	-0.01	-0.01	0.11	0.13	0.11	-0.11	0.27	0.21
21 Mother PPVT	0.19	-0.20	0.01	-0.04	0.19	0.21	0.09	-0.14	0.34	0.38
22 Site 1	-0.06	0.03	0.01	0.08	-0.09	-0.06	0.08	-0.06	0.05	-0.16
23 Site 2	0.01	-0.09	0.05	0.03	0.01	0.06	0.05	-0.05	0.02	0.06
24 Site 3	0.09	-0.06	-0.04	-0.02	0.09	-0.05	-0.01	-0.10	-0.03	-0.05
25 Site 4	0.01	0.02	-0.00	-0.04	0.01	0.05	0.02	0.13	-0.01	0.08
26 Site 5	-0.05	0.04	0.05	-0.03	-0.05	0.05	0.00	0.04	-0.03	-0.03
27 Site 6	-0.04	0.06	-0.03	-0.05	-0.00	-0.04	0.01	-0.03	-0.03	0.00
28 Site 7	-0.05	0.02	0.02	0.02	-0.05	-0.01	-0.08	0.13	-0.11	-0.04
29 Site 8	0.02	-0.00	0.00	-0.07	0.05	0.10	-0.02	-0.07	0.01	0.00
30 Site 9	0.01	-0.03	0.01	0.04	-0.01	-0.05	0.02	-0.04	0.15	0.16
31 Birthweight (g's)	0.01	-0.00	0.00	-0.06	0.04	-0.04	0.07	-0.01	0.10	0.15
32 Bracken	0.25	-0.18	-0.10	-0.03	0.25	0.25	0.23	-0.26	0.54	0.47
33 Bayley	0.30	-0.23	-0.08	-0.05	0.28	0.24	0.24	-0.16	0.43	0.37
34 Temperament	-0.11	0.14	-0.04	-0.00	-0.09	-0.16	-0.05	0.11	-0.13	-0.16
H.O.M.E. Controls										
35 Learn. Mater.	0.28	-0.21	-0.10	-0.02	0.26	0.25	0.14	-0.18	0.38	0.36
36 Lang. Stim.	0.20	-0.14	-0.06	-0.05	0.20	0.12	0.09	-0.11	0.27	0.19
37 Phys. Env.	0.21	-0.12	-0.14	0.02	0.19	0.16	0.15	-0.12	0.29	0.24
38 Responsivity	0.16	-0.10	-0.08	-0.05	0.18	0.16	0.15	-0.10	0.25	0.17
39 Academ. Stim.	0.19	-0.15	-0.05	-0.03	0.18	0.12	0.08	-0.13	0.27	0.22
40 Modeling	0.14	-0.07	-0.08	-0.03	0.14	0.12	0.11	-0.05	0.23	0.23
41 Variety	0.22	-0.10	-0.14	-0.05	0.22	0.14	0.14	-0.19	0.29	0.27
42 Acceptance	0.09	-0.02	-0.09	-0.02	0.09	0.16	0.12	-0.14	0.13	0.18

43	Respons. Emp.	0.17	-0.10	-0.09	-0.04	0.17	0.13	0.11	-0.06	0.22	0.13
54-month Controls											
44	Letter Word (54)	0.25	-0.19	-0.08	-0.02	0.23	0.24	0.25	-0.22	0.56	0.44
45	App. Prob. (54)	0.34	-0.27	-0.11	0.02	0.30	0.29	0.31	-0.28	0.63	0.50
46	Pic. Vocab. (54)	0.24	-0.18	-0.03	-0.09	0.24	0.17	0.17	-0.13	0.37	0.46
47	Mem. Sent. (54)	0.26	-0.24	-0.06	0.03	0.23	0.24	0.21	-0.18	0.42	0.41
48	Inc. Words (54)	0.20	-0.16	-0.04	-0.04	0.20	0.10	0.22	-0.14	0.40	0.37
49	Internalizing (54)	-0.04	0.03	0.02	-0.00	-0.03	-0.17	-0.02	0.09	-0.08	-0.08
50	Externalizing (54)	-0.12	0.08	0.07	-0.02	-0.10	-0.39	-0.06	0.07	-0.10	-0.13

PANEL 2		11	12	13	14	15	16	17	18	19	20
11	Behavior (G1)	1.00									
12	Behavior (15)	0.54	1.00								
Demographic Controls											
13	Male	0.01	-0.04	1.00							
14	Black	0.06	-0.04	-0.01	1.00						
15	Hispanic	0.00	0.04	0.05	-0.12	1.00					
16	Other	-0.06	-0.01	-0.07	-0.09	-0.06	1.00				
17	Age	0.04	0.04	0.01	0.02	0.02	-0.02	1.00			
18	Log of Income	-0.15	-0.16	-0.01	-0.35	-0.04	-0.05	0.01	1.00		
19	Mother's Age	-0.24	-0.23	-0.05	-0.25	-0.06	-0.05	-0.03	0.48	1.00	
20	Mother's Ed (yrs)	-0.08	-0.10	-0.05	-0.07	-0.08	-0.08	0.03	0.45	0.36	1.00
21	Mother PPVT	-0.09	-0.02	-0.04	-0.39	-0.05	-0.05	-0.02	0.39	0.34	0.39
22	Site 1	0.09	0.08	-0.02	0.13	-0.09	-0.07	-0.07	-0.05	-0.07	0.02
23	Site 2	-0.06	-0.07	-0.01	-0.14	0.32	0.02	-0.18	0.20	0.08	0.07
24	Site 3	0.01	0.08	-0.07	-0.01	0.04	-0.01	0.09	-0.03	-0.06	0.01
25	Site 4	-0.10	-0.06	0.07	-0.09	-0.07	0.04	-0.02	0.06	0.11	-0.01
26	Site 5	-0.03	-0.06	0.00	0.19	-0.07	-0.01	0.22	-0.10	0.05	0.05
27	Site 6	0.02	-0.05	0.03	0.20	-0.04	-0.05	-0.11	0.02	0.04	0.05
28	Site 7	-0.02	-0.03	0.03	0.01	-0.02	0.04	0.20	-0.12	-0.10	-0.16
29	Site 8	-0.09	0.02	0.01	-0.04	0.03	0.07	-0.18	0.02	0.07	0.03
30	Site 9	0.01	0.00	-0.00	-0.10	-0.08	-0.06	0.04	0.04	-0.03	-0.07
31	Birthweight (g's)	0.05	0.08	0.11	-0.17	0.08	-0.10	0.06	0.04	0.06	0.08
32	Bracken	-0.09	-0.06	-0.14	-0.30	-0.00	-0.05	0.03	0.37	0.27	0.28
33	Bayley	-0.05	-0.11	-0.16	-0.31	-0.06	0.02	-0.01	0.35	0.19	0.24
34	Temperament	0.12	0.14	-0.02	0.19	-0.01	0.06	0.01	-0.22	-0.21	-0.07
H.O.M.E. Controls											
35	Learn. Mater.	-0.08	-0.08	-0.05	-0.37	-0.06	-0.09	0.05	0.45	0.28	0.38
36	Lang. Stim.	0.05	-0.05	-0.02	-0.09	-0.09	-0.13	0.04	0.27	0.07	0.20
37	Phys. Env.	-0.09	-0.08	-0.01	-0.24	0.01	-0.01	-0.04	0.31	0.19	0.19
38	Responsivity	-0.04	-0.02	-0.01	-0.22	-0.00	-0.07	-0.10	0.32	0.22	0.24
39	Academ. Stim.	0.03	-0.00	-0.01	-0.17	-0.07	-0.03	0.03	0.23	0.07	0.23
40	Modeling	-0.02	0.02	-0.04	-0.13	-0.03	-0.07	-0.03	0.26	0.19	0.29
41	Variety	-0.07	-0.03	-0.04	-0.26	-0.05	-0.05	0.01	0.38	0.21	0.27
42	Acceptance	-0.17	-0.15	-0.04	-0.07	0.02	-0.03	-0.07	0.16	0.18	0.15
43	Respons. Emp.	-0.03	-0.02	-0.03	-0.16	-0.03	-0.04	-0.06	0.31	0.15	0.24
54-month Controls											
44	Letter Word (54)	-0.03	-0.03	-0.07	-0.18	-0.06	0.04	-0.03	0.31	0.14	0.26
45	App. Prob. (54)	-0.02	-0.10	-0.10	-0.30	-0.06	0.01	-0.02	0.38	0.22	0.26
46	Pic. Vocab. (54)	-0.05	0.01	0.11	-0.34	-0.06	-0.02	0.03	0.34	0.28	0.26

47	Mem. Sent. (54)	-0.08	-0.05	-0.05	-0.16	-0.13	0.06	0.02	0.26	0.18	0.17
48	Inc. Words (54)	0.01	-0.10	0.00	-0.16	-0.09	0.05	0.04	0.23	0.15	0.14
49	Internalizing (54)	0.52	0.36	0.04	0.06	0.00	0.01	0.14	-0.07	-0.13	-0.11
50	Externalizing (54)	0.64	0.45	-0.06	0.05	0.01	-0.01	0.03	-0.11	-0.17	-0.13

PANEL 3		21	22	23	24	25	26	27	28	29	30
21	Mother PPVT	1.00									
22	Site 1	-0.11	1.00								
23	Site 2	0.12	-0.11	1.00							
24	Site 3	-0.01	-0.11	-0.10	1.00						
25	Site 4	0.00	-0.12	-0.11	-0.11	1.00					
26	Site 5	-0.04	-0.12	-0.11	-0.11	-0.12	1.00				
27	Site 6	-0.02	-0.09	-0.08	-0.08	-0.09	-0.09	1.00			
28	Site 7	-0.05	-0.12	-0.11	-0.11	-0.12	-0.12	-0.09	1.00		
29	Site 8	0.10	-0.10	-0.09	-0.09	-0.10	-0.10	-0.07	-0.10	1.00	
30	Site 9	-0.06	-0.13	-0.12	-0.12	-0.13	-0.13	-0.10	-0.14	-0.11	1.00
31	Birthweight (g's)	0.11	-0.05	0.01	-0.07	0.07	0.01	-0.00	0.00	-0.03	0.01
32	Bracken	0.36	-0.02	0.10	0.01	0.09	0.04	-0.06	-0.19	0.04	0.03
33	Bayley	0.30	-0.04	0.11	0.02	0.16	0.04	-0.10	-0.24	-0.09	0.06
34	Temperament	-0.19	0.07	-0.12	-0.02	-0.02	-0.03	0.06	0.04	0.00	0.03
H.O.M.E. Controls											
35	Learn. Mater.	0.42	-0.03	-0.06	-0.03	0.02	-0.05	0.00	-0.10	-0.02	0.12
36	Lang. Stim.	0.22	0.10	-0.18	-0.19	-0.18	-0.00	0.17	-0.02	0.07	0.13
37	Phys. Env.	0.23	-0.05	-0.06	-0.07	0.05	0.07	-0.03	-0.27	-0.08	0.22
38	Responsivity	0.25	-0.08	-0.01	-0.09	-0.01	-0.11	0.25	-0.32	0.18	0.11
39	Academ. Stim.	0.23	-0.01	-0.16	-0.07	-0.04	0.02	0.10	-0.14	0.05	0.12
40	Modeling	0.23	0.06	0.01	-0.09	-0.08	-0.02	0.09	-0.10	0.00	-0.02
41	Variety	0.29	0.03	-0.12	-0.06	0.01	-0.05	0.08	-0.11	0.05	0.15
42	Acceptance	0.15	-0.07	0.05	-0.07	0.03	-0.03	0.09	0.03	0.01	-0.13
43	Respons. Emp.	0.22	0.08	-0.04	-0.11	-0.01	-0.17	0.15	-0.14	0.14	0.05
54-month Controls											
44	Letter Word (54)	0.31	-0.00	0.00	0.03	0.08	0.01	0.01	-0.15	0.01	0.00
45	App. Prob. (54)	0.37	-0.05	0.03	0.02	0.12	-0.03	0.02	-0.11	-0.01	0.05
46	Pic. Vocab. (54)	0.40	-0.12	0.01	0.03	0.14	-0.02	-0.05	-0.07	0.04	0.02
47	Mem. Sent. (54)	0.23	-0.06	-0.07	-0.05	0.11	0.11	-0.02	-0.13	0.01	0.11
48	Inc. Words (54)	0.24	-0.08	-0.07	-0.06	0.07	0.06	-0.07	-0.04	-0.05	0.20
49	Internalizing (54)	-0.12	0.01	-0.03	0.00	0.06	0.00	0.03	0.02	-0.07	-0.07
50	Externalizing (54)	-0.10	0.04	0.01	0.04	-0.04	-0.01	0.01	0.00	-0.08	-0.00

PANEL 4		31	32	33	34	35	36	37	38	39	40
31	Birthweight (g's)	1.00									
32	Bracken	0.11	1.00								
33	Bayley	0.07	0.46	1.00							
34	Temperament	-0.05	-0.15	-0.10	1.00						
H.O.M.E. Controls											
35	Learn. Mater.	0.08	0.39	0.41	-0.13	1.00					
36	Lang. Stim.	0.07	0.24	0.19	-0.04	0.46	1.00				
37	Phys. Env.	0.04	0.26	0.27	-0.09	0.44	0.31	1.00			
38	Responsivity	0.09	0.27	0.21	-0.11	0.34	0.38	0.25	1.00		

39	Academ. Stim.	0.11	0.30	0.25	-0.02	0.55	0.55	0.32	0.33	1.00	
40	Modeling	0.05	0.18	0.22	-0.14	0.34	0.27	0.24	0.23	0.25	1.00
41	Variety	0.05	0.30	0.30	-0.08	0.56	0.41	0.37	0.28	0.46	0.31
42	Acceptance	0.05	0.17	0.12	-0.06	0.23	0.15	0.17	0.16	0.12	0.30
43	Respons. Emp.	0.04	0.20	0.17	-0.11	0.31	0.48	0.24	0.79	0.28	0.23
54-month Controls											
44	Letter Word (54)	0.09	0.55	0.37	-0.09	0.35	0.27	0.28	0.24	0.32	0.21
45	App. Prob. (54)	0.12	0.54	0.55	-0.15	0.40	0.24	0.30	0.23	0.23	0.16
46	Pic. Vocab. (54)	0.11	0.43	0.38	-0.13	0.39	0.20	0.25	0.25	0.28	0.16
47	Mem. Sent. (54)	0.10	0.38	0.42	-0.06	0.30	0.19	0.26	0.15	0.21	0.16
48	Inc. Words (54)	0.11	0.30	0.39	-0.09	0.28	0.25	0.27	0.13	0.23	0.15
49	Internalizing (54)	0.05	-0.04	0.02	0.14	-0.07	-0.00	-0.05	-0.01	0.03	-0.02
50	Externalizing (54)	0.04	-0.09	-0.01	0.13	-0.10	-0.05	-0.11	-0.10	-0.07	-0.10

PANEL 5		41	42	43	44	45	46	47	48	49	50
41	Variety	1.00									
42	Acceptance	0.16	1.00								
43	Respons. Emp.	0.25	0.18	1.00							
54-month Controls											
44	Letter Word (54)	0.31	0.17	0.19	1.00						
45	App. Prob. (54)	0.28	0.21	0.19	0.57	1.00					
46	Pic. Vocab. (54)	0.32	0.11	0.18	0.44	0.47	1.00				
47	Mem. Sent. (54)	0.31	0.11	0.09	0.40	0.47	0.42	1.00			
48	Inc. Words (54)	0.28	0.11	0.15	0.37	0.46	0.39	0.49	1.00		
49	Internalizing (54)	-0.06	-0.09	-0.03	0.02	-0.03	-0.03	-0.02	-0.04	1.00	
50	Externalizing (54)	-0.09	-0.15	-0.13	-0.03	-0.03	-0.05	-0.10	-0.05	0.59	1.00

Note. $n=552$. Only children from mothers who had not completed college were included here, and all non-missing cases for each pairwise correlation were included. Tables 2 and 3 include the full variable names and labels. The "G1" abbreviation stands for "grade 1," "15" stands for "age 15," and "54" stands for 54 months.

Table S2

Correlations Between All Analysis Variables for Children of Mothers Completed College

PANEL 1	1	2	3	4	5	6	7	8	9	10
Gratification Delay (54)										
1 Continuous	1.00									
2 <0.333 min.	-0.66	1.00								
3 0.333- 2 min.	-0.54	-0.11	1.00							
4 2 to 7 min.	-0.20	-0.12	-0.12	1.00						
5 7 min.	0.91	-0.48	-0.48	-0.55	1.00					
Related Measures										
6 Self-control (54)	0.17	-0.10	-0.17	0.01	0.17	1.00				
7 Attention (54)	0.15	-0.15	-0.02	-0.05	0.14	0.17	1.00			
8 Impulsivity (54)	-0.26	0.18	0.12	0.06	-0.24	-0.33	-0.29	1.00		
Outcome Measures										
9 Achievement (G1)	0.17	-0.16	-0.05	-0.03	0.15	0.25	0.25	-0.17	1.00	
10 Achievement (15)	0.15	-0.11	-0.08	-0.04	0.14	0.27	0.14	-0.15	0.59	1.00
11 Behavior (G1)	-0.05	0.06	0.04	-0.04	-0.03	-0.20	-0.08	-0.01	-0.02	-0.05
12 Behavior (15)	0.03	0.02	-0.00	-0.11	0.07	-0.18	-0.05	0.06	-0.06	-0.07
Demographic Controls										
13 Male	-0.03	0.04	-0.04	0.07	-0.05	-0.16	-0.01	0.22	-0.02	0.00
14 Black	-0.16	0.02	0.09	0.13	-0.16	-0.11	-0.05	0.02	-0.14	-0.18
15 Hispanic	-0.02	0.00	0.06	-0.06	0.01	-0.01	-0.01	0.01	0.02	-0.00
16 Other	-0.09	-0.02	0.12	0.05	-0.10	0.01	0.08	0.03	0.08	0.12
17 Age	0.03	-0.06	-0.01	0.06	0.00	0.05	0.14	-0.06	0.10	-0.08
18 Log of Income	0.14	-0.14	-0.03	0.00	0.11	0.15	0.01	-0.05	0.09	0.10
19 Mother's Age	-0.04	-0.00	0.01	0.04	-0.03	-0.08	-0.06	0.09	-0.09	0.04
20 Mother's Ed (yrs)	0.08	-0.06	-0.07	0.01	0.07	0.05	-0.02	-0.07	0.06	0.05
21 Mother PPVT	0.21	-0.10	-0.18	-0.09	0.24	0.16	0.02	-0.05	0.12	0.32
22 Site 1	0.06	-0.05	-0.05	0.01	0.06	-0.01	0.05	0.05	0.06	-0.06
23 Site 2	-0.02	0.01	0.04	-0.02	-0.02	-0.01	-0.01	0.01	0.12	0.15
24 Site 3	0.05	-0.02	-0.02	-0.02	0.04	-0.03	0.05	-0.06	-0.08	-0.13
25 Site 4	0.00	0.00	-0.03	0.04	-0.01	-0.00	0.11	-0.03	0.00	0.04
26 Site 5	-0.08	-0.00	0.09	0.05	-0.09	-0.03	0.07	-0.05	-0.02	-0.10
27 Site 6	0.04	-0.06	-0.03	0.04	0.02	0.10	0.02	0.01	0.02	0.06
28 Site 7	-0.02	0.06	-0.04	-0.00	-0.01	-0.02	-0.12	0.09	0.08	0.14
29 Site 8	0.07	0.05	-0.10	-0.10	0.10	0.05	-0.01	-0.05	-0.09	0.00
30 Site 9	-0.09	0.02	0.10	0.04	-0.10	-0.04	-0.03	0.07	-0.06	-0.10
31 Birthweight (g's)	-0.08	0.09	0.05	-0.06	-0.05	-0.04	-0.00	0.04	0.09	0.02
32 Bracken	0.14	-0.17	-0.01	0.01	0.11	0.26	0.22	-0.18	0.40	0.33
33 Bayley	0.26	-0.25	-0.01	-0.06	0.21	0.22	0.16	-0.27	0.24	0.22
34 Temperament	0.04	-0.03	0.04	-0.08	0.05	-0.04	0.02	-0.06	0.01	0.05
H.O.M.E. Controls										
35 Learn. Mater.	0.09	-0.12	-0.04	0.06	0.06	0.17	0.05	-0.15	0.13	0.13
36 Lang. Stim.	0.14	-0.19	0.02	0.00	0.11	0.15	0.00	-0.12	0.08	0.07
37 Phys. Env.	0.06	-0.07	-0.03	0.07	0.01	-0.03	0.02	-0.01	-0.06	-0.10
38 Responsivity	0.11	-0.11	-0.04	-0.04	0.12	0.06	0.04	-0.05	-0.09	-0.04
39 Academ. Stim.	0.13	-0.14	-0.04	0.06	0.07	0.06	-0.08	-0.10	0.04	-0.02
40 Modeling	0.06	-0.08	0.05	-0.05	0.06	0.08	0.01	0.03	0.03	0.06
41 Variety	0.12	-0.11	-0.06	0.02	0.10	0.14	-0.04	-0.09	0.02	0.04
42 Acceptance	0.08	-0.10	0.04	-0.07	0.09	0.17	0.06	-0.14	0.07	0.06

43	Respons. Emp.	0.15	-0.17	-0.01	-0.06	0.15	0.08	0.06	-0.07	-0.01	0.04
54-month Controls											
44	Letter Word (54)	0.16	-0.16	-0.04	-0.02	0.14	0.19	0.15	-0.14	0.57	0.39
45	App. Prob. (54)	0.26	-0.15	-0.19	-0.03	0.23	0.28	0.27	-0.28	0.48	0.50
46	Pic. Vocab. (54)	0.20	-0.13	-0.11	-0.06	0.19	0.21	0.20	-0.13	0.33	0.37
47	Mem. Sent. (54)	0.22	-0.19	-0.08	-0.06	0.22	0.23	0.17	-0.17	0.31	0.32
48	Inc. Words (54)	0.17	-0.07	-0.11	-0.07	0.16	0.11	0.07	-0.13	0.27	0.18
49	Internalizing (54)	-0.02	0.03	0.01	-0.02	-0.01	-0.15	-0.07	0.04	-0.00	-0.01
50	Externalizing (54)	-0.03	0.01	0.07	-0.03	-0.03	-0.37	-0.07	0.10	-0.03	-0.04

PANEL 2		11	12	13	14	15	16	17	18	19	20
11	Behavior (G1)	1.00									
12	Behavior (15)	0.56	1.00								
Demographic Controls											
13	Male	-0.03	-0.04	1.00							
14	Black	-0.07	-0.02	-0.01	1.00						
15	Hispanic	-0.00	-0.02	-0.02	-0.02	1.00					
16	Other	0.08	-0.02	0.03	-0.03	-0.03	1.00				
17	Age	0.02	0.02	-0.02	0.07	-0.02	-0.07	1.00			
18	Log of Income	-0.07	-0.03	-0.01	-0.03	-0.08	0.08	0.00	1.00		
19	Mother's Age	0.05	-0.04	0.01	-0.02	-0.12	-0.04	-0.03	0.22	1.00	
20	Mother's Ed (yrs)	-0.09	-0.10	-0.01	-0.01	-0.05	0.02	0.05	0.24	0.28	1.00
21	Mother PPVT	0.01	0.06	0.06	-0.16	-0.14	-0.18	-0.04	0.21	0.31	0.28
22	Site 1	0.07	0.02	0.03	-0.04	-0.04	-0.05	0.05	-0.06	-0.05	-0.02
23	Site 2	-0.04	-0.07	0.02	-0.05	0.05	-0.07	-0.17	0.13	0.01	-0.11
24	Site 3	0.08	-0.05	0.04	-0.05	0.16	-0.07	0.12	-0.19	-0.06	-0.01
25	Site 4	-0.03	-0.01	-0.06	0.03	0.01	0.04	0.04	0.12	0.05	-0.03
26	Site 5	0.00	0.05	0.04	0.01	-0.06	-0.03	0.23	-0.02	-0.01	-0.03
27	Site 6	-0.15	-0.07	-0.07	0.11	-0.07	0.03	-0.09	0.12	0.03	0.02
28	Site 7	-0.03	-0.03	0.01	-0.04	0.06	-0.02	0.05	-0.01	0.02	0.06
29	Site 8	0.10	0.11	-0.01	0.00	-0.02	0.16	-0.20	0.07	0.06	0.05
30	Site 9	0.04	0.04	0.04	0.04	-0.04	-0.05	0.03	-0.15	-0.06	-0.05
31	Birthweight (g's)	-0.00	0.13	0.15	-0.03	-0.03	-0.03	-0.07	-0.04	-0.03	-0.02
32	Bracken	0.00	-0.03	-0.19	-0.14	-0.14	0.02	-0.01	0.20	-0.04	0.05
33	Bayley	-0.05	-0.06	-0.20	-0.14	-0.05	-0.03	-0.03	0.15	-0.05	0.07
34	Temperament	0.10	0.12	-0.07	0.02	-0.06	0.02	-0.06	-0.03	-0.05	-0.00
H.O.M.E. Controls											
35	Learn. Mater.	-0.05	-0.01	-0.05	-0.18	-0.20	-0.07	0.04	0.09	0.02	0.05
36	Lang. Stim.	-0.08	-0.02	-0.02	0.04	-0.16	-0.07	-0.02	0.05	-0.03	0.05
37	Phys. Env.	-0.03	0.03	0.09	-0.03	0.05	0.05	-0.01	-0.06	-0.14	-0.02
38	Responsivity	-0.12	-0.07	-0.02	-0.00	-0.17	-0.08	-0.07	0.09	0.10	0.06
39	Academ. Stim.	0.02	0.05	-0.07	-0.03	-0.08	-0.05	-0.02	-0.01	-0.04	0.01
40	Modeling	-0.10	-0.05	-0.06	0.04	-0.05	-0.04	-0.06	0.09	-0.01	0.01
41	Variety	-0.08	-0.01	-0.00	-0.04	-0.12	-0.07	0.04	0.07	-0.01	0.08
42	Acceptance	-0.10	-0.06	-0.07	0.01	-0.06	0.07	0.02	0.12	0.04	0.09
43	Respons. Emp.	-0.07	-0.04	0.03	-0.06	-0.10	-0.05	-0.05	0.10	0.08	0.09
54-month Controls											
44	Letter Word (54)	-0.05	-0.03	-0.15	-0.02	-0.04	0.07	0.03	0.17	-0.12	0.07
45	App. Prob. (54)	0.01	-0.04	-0.10	-0.18	-0.01	0.00	0.01	0.11	0.01	0.13
46	Pic. Vocab. (54)	-0.09	0.02	0.12	-0.12	-0.12	0.01	0.04	0.20	0.02	0.13

47	Mem. Sent. (54)	-0.10	-0.08	-0.02	-0.06	-0.02	0.02	0.05	0.09	0.02	0.08
48	Inc. Words (54)	-0.09	-0.09	0.00	-0.08	-0.06	-0.05	0.03	-0.02	-0.03	0.07
49	Internalizing (54)	0.56	0.38	0.02	-0.10	-0.05	0.05	0.01	0.02	0.05	-0.05
50	Externalizing (54)	0.59	0.50	-0.10	-0.04	-0.00	0.00	-0.03	-0.05	0.04	-0.08

PANEL 3		21	22	23	24	25	26	27	28	29	30
21	Mother PPVT	1.00									
22	Site 1	-0.01	1.00								
23	Site 2	-0.07	-0.09	1.00							
24	Site 3	-0.08	-0.09	-0.12	1.00						
25	Site 4	0.01	-0.08	-0.10	-0.10	1.00					
26	Site 5	-0.01	-0.09	-0.12	-0.12	-0.11	1.00				
27	Site 6	0.08	-0.11	-0.14	-0.14	-0.12	-0.15	1.00			
28	Site 7	0.09	-0.08	-0.11	-0.11	-0.09	-0.11	-0.13	1.00		
29	Site 8	0.11	-0.10	-0.14	-0.14	-0.12	-0.14	-0.16	-0.13	1.00	
30	Site 9	-0.10	-0.07	-0.09	-0.09	-0.08	-0.10	-0.11	-0.08	-0.11	1.00
31	Birthweight (g's)	0.11	0.05	0.05	-0.05	-0.00	-0.06	-0.08	-0.03	0.10	0.05
32	Bracken	0.11	-0.05	0.08	-0.04	0.00	-0.06	0.06	0.00	-0.04	-0.05
33	Bayley	0.08	0.00	0.07	-0.10	0.09	-0.01	0.05	-0.06	-0.11	-0.06
34	Temperament	-0.09	0.03	-0.02	-0.00	-0.01	-0.07	0.02	-0.00	0.08	0.00
H.O.M.E. Controls											
35	Learn. Mater.	0.19	-0.02	-0.19	-0.01	-0.13	0.05	0.05	0.13	-0.09	0.05
36	Lang. Stim.	0.10	0.01	-0.15	-0.11	-0.22	0.04	0.17	0.09	-0.00	0.08
37	Phys. Env.	-0.14	-0.06	-0.08	-0.01	-0.02	0.14	0.03	-0.18	-0.07	0.17
38	Responsivity	0.09	-0.13	-0.01	-0.04	-0.02	-0.12	0.34	-0.27	-0.02	0.05
39	Academ. Stim.	0.07	0.03	-0.24	-0.05	-0.13	0.07	0.11	-0.04	-0.00	0.10
40	Modeling	0.10	-0.09	0.02	-0.11	-0.07	0.00	0.15	-0.04	0.00	-0.08
41	Variety	0.19	0.09	-0.20	-0.08	-0.09	-0.02	0.17	-0.02	0.02	0.06
42	Acceptance	0.08	-0.11	-0.13	-0.06	-0.01	-0.09	0.17	0.08	0.04	-0.08
43	Respons. Emp.	0.14	-0.02	-0.03	0.00	-0.04	-0.13	0.17	-0.03	-0.06	0.00
54-month Controls											
44	Letter Word (54)	0.08	0.02	-0.01	-0.08	-0.00	-0.05	0.12	0.06	-0.02	-0.08
45	App. Prob. (54)	0.26	-0.07	0.02	-0.02	0.02	-0.03	0.09	0.03	0.03	-0.10
46	Pic. Vocab. (54)	0.34	-0.06	-0.00	-0.03	-0.01	-0.03	0.06	0.03	0.12	-0.02
47	Mem. Sent. (54)	0.19	-0.07	-0.06	-0.08	0.05	0.05	0.07	0.08	0.02	-0.03
48	Inc. Words (54)	0.14	-0.01	-0.06	-0.03	-0.04	0.03	0.10	0.11	-0.10	0.08
49	Internalizing (54)	-0.04	-0.00	-0.05	-0.06	-0.03	0.12	-0.12	0.00	0.06	0.03
50	Externalizing (54)	-0.06	0.04	0.01	0.02	-0.02	0.04	-0.04	-0.04	-0.01	-0.00

PANEL 4		31	32	33	34	35	36	37	38	39	40
31	Birthweight (g's)	1.00									
32	Bracken	-0.03	1.00								
33	Bayley	-0.01	0.45	1.00							
34	Temperament	-0.01	-0.02	-0.05	1.00						
H.O.M.E. Controls											
35	Learn. Mater.	-0.03	0.31	0.22	0.02	1.00					
36	Lang. Stim.	0.13	0.21	0.15	0.05	0.53	1.00				
37	Phys. Env.	-0.10	0.02	0.01	0.01	0.16	0.09	1.00			
38	Responsivity	0.00	0.22	0.15	-0.04	0.28	0.28	0.15	1.00		

39	Academ. Stim.	-0.01	0.24	0.16	0.05	0.48	0.48	0.18	0.24	1.00	
40	Modeling	0.06	0.08	0.08	0.03	0.18	0.27	0.18	0.26	0.21	1.00
41	Variety	-0.03	0.18	0.27	-0.02	0.30	0.28	0.10	0.26	0.23	0.22
42	Acceptance	0.01	0.15	0.16	0.05	0.17	0.23	0.02	0.14	0.05	0.23
43	Respons. Emp.	-0.00	0.18	0.08	-0.10	0.30	0.43	0.17	0.68	0.21	0.27
54-month Controls											
44	Letter Word (54)	-0.01	0.55	0.25	0.04	0.21	0.20	-0.03	0.14	0.25	0.07
45	App. Prob. (54)	-0.02	0.44	0.42	0.02	0.19	0.08	0.00	0.09	0.12	-0.03
46	Pic. Vocab. (54)	0.10	0.30	0.36	-0.01	0.23	0.18	0.01	0.14	0.13	0.06
47	Mem. Sent. (54)	0.03	0.26	0.35	-0.03	0.15	0.13	-0.07	0.09	0.13	-0.05
48	Inc. Words (54)	0.03	0.15	0.19	-0.06	0.14	0.12	-0.01	0.09	0.10	-0.02
49	Internalizing (54)	0.02	0.04	-0.08	0.11	-0.00	-0.07	0.08	-0.08	0.04	-0.03
50	Externalizing (54)	0.05	-0.06	-0.06	0.06	-0.08	-0.06	0.00	-0.05	-0.03	-0.07
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PANEL 5		41	42	43	44	45	46	47	48	49	50
41	Variety	1.00									
42	Acceptance	0.21	1.00								
43	Respons. Emp.	0.24	0.29	1.00							
54-month Controls											
44	Letter Word (54)	0.09	0.04	0.12	1.00						
45	App. Prob. (54)	0.12	0.07	0.08	0.45	1.00					
46	Pic. Vocab. (54)	0.25	0.07	0.15	0.32	0.44	1.00				
47	Mem. Sent. (54)	0.13	0.10	0.09	0.32	0.36	0.40	1.00			
48	Inc. Words (54)	0.10	-0.02	0.09	0.22	0.32	0.22	0.42	1.00		
49	Internalizing (54)	-0.05	0.00	-0.08	-0.02	-0.01	-0.12	-0.08	-0.02	1.00	
50	Externalizing (54)	-0.08	-0.07	-0.04	0.01	-0.01	-0.08	-0.07	0.00	0.57	1.00

Note. $n=366$. Only children from mothers completed college were included here, and all non-missing cases for each pairwise correlation were included. Tables 2 and 3 include the full variable names and labels. The "G1" abbreviation stands for "grade 1," "15" stands for "age 15," and "54" stands for 54 months.

Table S3

*Delay of Gratification and Later Outcomes with Controls for Attention and Impulsivity
Added (Lower-SES sample)*

	Grade 1 Achievement	Age 15 Achievement	Grade 1 Behavior	Age 15 Behavior
	(1)	(2)	(3)	(4)
<i>Delay of Gratification (categorical)</i>				
<0.333 minutes	ref	ref	ref	ref
0.333- 2 minutes	0.166 (0.104)	0.200 (0.105)	0.096 (0.139)	-0.073 (0.150)
2 to 7 minutes	0.186 (0.103)	0.271* (0.105)	-0.016 (0.138)	-0.110 (0.146)
7 minutes	0.206* (0.088)	0.185* (0.092)	0.006 (0.118)	-0.103 (0.128)
<i>Continuous Performance Task</i>				
Sustained Attention	0.088* (0.034)	0.026 (0.035)	-0.013 (0.044)	0.013 (0.048)
Impulsivity	-0.072* (0.036)	-0.062 (0.039)	0.011 (0.047)	-0.005 (0.053)
p-value of test of equality of all categories	.113	.056	.868	.853
p-value of test of equality of 2 nd , 3 rd and 4 th categories	.914	.646	.714	.968
Child demographic and H.O.M.E. controls	Inc.	Inc.	Inc.	Inc.
Concurrent 54-month controls	-	-	-	-

Note. $n = 552$. Standard errors are in parentheses. These estimates compare to the middle column in each set of estimates in Table 4 (i.e., the estimates with controls measured prior to age 54 months), with standardized measures of age 54-month attention and impulsivity added. See Table 4 note for full explanation of model parameters.

* $p < .05$

Table S4

Delay of Gratification and Later Outcomes with Index of Self-Control Added (Lower-SES Sample)

	Grade 1 Achievement	Age 15 Achievement	Grade 1 Behavior	Age 15 Behavior
	(1)	(2)	(3)	(4)
<i>Delay of Gratification (categorical)</i>				
<0.333 minutes	ref	ref	ref	ref
0.333- 2 minutes	0.221* (0.103)	0.252* (0.102)	0.050 (0.133)	-0.108 (0.146)
2 to 7 minutes	0.204* (0.102)	0.305* (0.102)	-0.018 (0.132)	-0.111 (0.142)
7 minutes	0.261* (0.085)	0.224* (0.087)	0.040 (0.109)	-0.068 (0.121)
Self-Control Composite	0.157* (0.034)	0.114* (0.035)	-0.303* (0.044)	-0.212* (0.049)
p-value of test of equality of all categories	.018*	.011*	.943	.848
p-value of test of equality of 2 nd , 3 rd and 4 th categories	.800	.680	.861	.926
Child demographic and H.O.M.E. controls	Inc.	Inc.	Inc.	Inc.
Concurrent 54-month controls	-	-	-	-

Note. $n = 552$. Standard errors are in parentheses. These estimates compare to the middle column in each set of estimates in Table 4 (i.e., the estimates with controls measured prior to age 54 months), with standardized measures of age 54-month self-control added. See Table 4 note for full explanation of model parameters.

Table S5
*Descriptive Characteristics of Supplemental
 Age 15 Behavioral Measures (Lower-SES
 Sample)*

	M (SD)
<i>Age 15 Behavioral Measures</i>	
Stoplight- Brake Applications	4.85 (1.47)
Stoplight- Brake Time (ms)	900.26 (358.33)
Internalizing (self-report)	47.44 (10.38)
Externalizing (self-report)	50.15 (10.02)
Impulse Control	3.48 (0.89)
Risk Taking	6.81 (5.82)
Observations	478

Note. See Table 2 note. Mean values are presented in each cell, and standard deviations are in parentheses.

Table S6

Associations Between Age 54 month Measure of Delay of Gratification and Measures of Age 15 Risk Taking (Lower-SES Sample)

	Stoplight- Brake Applications			Stoplight- Time Waited			Risk Taking		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>Delay minutes (categorical)</i>									
<0.333 minutes	ref	ref	ref	ref	ref	ref	ref	ref	ref
0.333- 2 minutes	-0.085 (0.154)	-0.182 (0.156)	-0.179 (0.156)	0.073 (0.155)	0.096 (0.153)	0.076 (0.153)	-0.072 (0.151)	0.087 (0.147)	0.085 (0.146)
2 to 7 minutes	0.234 (0.156)	0.143 (0.156)	0.106 (0.158)	0.111 (0.156)	0.179 (0.153)	0.188 (0.155)	-0.065 (0.151)	0.113 (0.145)	0.120 (0.146)
7 minutes	0.094 (0.123)	0.032 (0.132)	0.011 (0.133)	0.067 (0.124)	0.089 (0.129)	0.107 (0.130)	-0.377* (0.120)	-0.129 (0.123)	-0.129 (0.124)
p-value of test of equality of all categories	.236	.254	.374	.906	.709	.677	.004*	.189	.174
p-value of test of equality of 2 nd , 3 rd and 4 th categories	.157	.131	.213	.949	.793	.765	.015*	.093	.084
Child demographic and H.O.M.E. controls	-	Inc.	Inc.	-	Inc.	Inc.	-	Inc.	Inc.
Concurrent 54-month controls	-	-	Inc.	-	-	Inc.	-	-	Inc.

Note. $n = 552$. Standard errors are in parentheses. See Table 4 note.* $p < .05$

Table S7

Associations Between Age 54 month Measure of Delay of Gratification and Measures of Age 15 Behavior Problems (Lower-SES Sample)

	Internalizing			Externalizing			Impulse Control		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>Delay minutes (categorical)</i>									
<0.333 minutes	ref	ref	ref	ref	ref	ref	ref	ref	ref
0.333- 2 minutes	0.107 (0.152)	0.196 (0.150)	0.182 (0.151)	-0.011 (0.150)	0.128 (0.148)	0.090 (0.148)	0.040 (0.146)	-0.050 (0.143)	-0.039 (0.143)
2 to 7 minutes	-0.032 (0.152)	0.047 (0.149)	0.008 (0.151)	-0.124 (0.150)	0.039 (0.147)	0.020 (0.149)	-0.056 (0.146)	-0.150 (0.142)	-0.130 (0.144)
7 minutes	-0.075 (0.121)	-0.024 (0.127)	-0.038 (0.128)	-0.156 (0.120)	-0.041 (0.125)	-0.068 (0.126)	0.087 (0.116)	-0.041 (0.120)	-0.024 (0.122)
p-value of test of equality of all categories	.594	.425	.443	.503	.641	.676	.704	.752	.811
p-value of test of equality of 2 nd , 3 rd and 4 th categories	.400	.270	.270	.548	.438	.467	.545	.672	.695
Child demographic and H.O.M.E. controls	-	Inc.	Inc.	-	Inc.	Inc.	-	Inc.	Inc.
Concurrent 54-month controls	-	-	Inc.	-	-	Inc.	-	-	Inc.

Note. $n = 552$. Standard errors are in parentheses. See Table 4 note.

* $p < .05$

Table S8

Associations Between Age 54 month Measure of Delay of Gratification and Disaggregated Measures of Age 15 Achievement and Behavior (Compare with Table 4)

	Math Achievement			Reading Achievement			Externalizing			Internalizing		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
<i>Delay minutes (categorical)</i>												
<0.333 minutes	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
0.333- 2 minutes	0.305* (0.122)	0.192 (0.109)	0.143 (0.105)	0.339* (0.128)	0.222* (0.112)	0.176 (0.107)	-0.173 (0.152)	-0.125 (0.148)	-0.158 (0.131)	-0.076 (0.150)	0.002 (0.148)	-0.030 (0.138)
2 to 7 minutes	0.440* (0.124)	0.287* (0.110)	0.197 (0.107)	0.400* (0.129)	0.257* (0.112)	0.220* (0.108)	-0.180 (0.151)	-0.114 (0.145)	-0.046 (0.129)	-0.146 (0.149)	-0.080 (0.145)	-0.049 (0.136)
7 minutes	0.569* (0.098)	0.222* (0.093)	0.130 (0.090)	0.615* (0.103)	0.208* (0.095)	0.142 (0.092)	0.307* (0.120)	-0.196 (0.123)	-0.140 (0.109)	-0.032 (0.119)	0.033 (0.123)	0.060 (0.116)
p-value of test of equality of all categories	.001*	.042*	.278	.001*	.070	.183	.084	.465	.503	.777	.861	.790
p-value of test of equality of 2 nd , 3 rd and 4 th categories	.046*	.699	.778	.024*	.887	.715	.477	.770	.655	.688	.688	.596
Child demographic and H.O.M.E. controls	-	Inc.	Inc.	-	Inc.	Inc.	-	Inc.	Inc.	-	Inc.	Inc.
Concurrent 54-month controls	-	-	Inc.	-	-	Inc.	-	-	Inc.	-	-	Inc.

Note. $n = 552$. Standard errors are in parentheses. See Table 4 note.

* $p < .05$